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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,986	08/15/2006	Siebe Jan Van Der Hoef	NL040149	8854

24737 7590 11/24/2008

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER	
ZHOU, HONG	
ART UNIT	**PAPER NUMBER**
2629	
MAIL DATE	**DELIVERY MODE**
11/24/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/597,986	VAN DER HOEF ET AL.	
	Examiner	Art Unit	
	HONG ZHOU	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/13/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61,31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim)with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

3. Claim 12 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The instant claim is directed to a processor program product which

can be a computer program embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al (US 5,296,847, hereinafter Takeda) in view of Zhou et al (WO 03/079323, hereinafter Zhou).

Regarding claim 1, Takeda discloses a display unit (Fig. 8) comprising: a display panel (e.g., a LCD display panel) with a pixel (7, Fig. 1) coupled to a predefined line (e.g., 21a', Fig. 8) via a capacitance (storage capacitance Cs 8, Fig. 1); and means (scan signal driving circuit 11 and image signal driving circuit 12, Fig. 8, col. 7, lines 25-33) for reducing a voltage difference (e.g., applying a modulating signal whose amplitude changes between Ve+ and Ve- alternately for each field to the pixel electrode via the storage capacitor Cs so as to reduce the DC potential difference , col. 2, lines 14-19 and lines 60-68, col. 3, lines 1-20) across the pixel (7, Fig. 1) resulting from a voltage-jump on the predefined line (the DC potential difference is caused by the potential changes of the scan signal Vg on the predefined line, e.g., 21a', col. 4, lines 53-57). Takeda fails to disclose that the pixel is a bi-stable pixel.

However, Zhou discloses a driving circuit of an electrophoretic display device (Fig. 2) similar to Takeda, wherein the display device is provided with a bi-stable pixel (18, Fig. 2, page 1, line 29) which retains its state in the absence of power (page 1, lines 28-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the display unit of Takeda with the feature of bi-stable pixel of the electrophoretic display device as taught by Zhou to use an electrophoretic display device for displaying information to a user because a display panel with a bi-stable pixel can reduce the power consumption of a drive circuit.

Regarding claim 2, Takeda further discloses wherein the pixel (7, Fig. 1) is coupled via a switching element (TFT 3, Fig. 1) to a line (21a, Fig. 8) neighboring the predefined line (21a', Fig. 8), with the capacitance (storage capacitance Cs 8, Fig. 1) comprising a storage capacitor (Cs 8, col. 4, lines 4-5).

Regarding claim 3, Takeda further discloses a display unit as claimed in claim 2, wherein the means (scan signal driving circuit 20 and image signal driving circuit 12, Fig. 8, col. 7, lines 26-28) comprise line driving circuitry (scan signal driving circuit 20) and data driving circuitry (image signal driving circuit 12) for supplying a data signal to pixels (7, Fig. 1) in at least two non-neighboring lines (e.g., scan lines 21a and 21z are two non-neighboring lines) simultaneously for the reducing of the voltage difference.

Regarding claim 4, Takeda further discloses a display unit as claimed in claim 1, wherein the pixel (7, Fig. 1) is coupled to a switching element (TFT 3, Fig. 1), with the capacitance (Cgd, Fig. 1) comprising a parasitic capacitor (Cgd 4, Fig. 1, col. 4, lines 56-57) of the switching element.

Regarding claim 5, Takeda further discloses a display unit as claimed in claim 4, wherein the means (scan signal driving circuit 20 and image signal driving circuit 12, Fig. 8, col. 7, lines 26-28) comprise line driving circuitry (scan signal driving circuit 20) and data driving circuitry (image signal driving circuit 12) for supplying a data signal to pixels (7, Fig. 1) in at least two lines simultaneously (e.g., scan lines 21a and 21b) for the reducing of the voltage difference.

Regarding claim 6, Takeda further discloses a display unit as claimed in claim 4, wherein the means (scan signal driving circuit 20 and image signal driving circuit 12, Fig. 8, col. 7, lines 26-28) comprise line driving circuitry (scan signal driving circuit 20) for driving at least two lines simultaneously (e.g., 21a' and 21a, Fig. 8) at a reduced amplitude for the reducing of the voltage difference (e.g., the amplitude of the scan signal Vg can be reduced, col. 8, lines 49-55).

Regarding claim 7, Takeda further discloses a display unit as claimed in claim 4, wherein the predefined line is a storage line (21a', Fig. 8, col. 8, lines 24-25) coupled via storage capacitors (Cs 8, Fig. 1) to pixels (7, Fig. 1), with the means comprising storage line driving circuitry (scan signal driving circuit 20, Fig. 8) for driving the storage line (21a') for the reducing of the voltage difference.

Regarding claim 8, Takeda further discloses a display unit as claimed in claim 1, wherein the voltage difference is reduced at the start and/or the end of an image update time-interval (as can be seen from Fig. 2, at the start of the scan signal Vg, the modulating signal Ve+ is applied to the pixel electrode for reducing the voltage difference and at the end of the scan signal Vg, the modulating signal Ve- is applied for reducing the voltage difference).

Regarding claim 9, Takeda as modified by Zhou disclose a display unit as claimed in claim 1. Zhou further discloses the display unit comprising a controller (processor 15, Fig. 2,

also see page 6, line 16), which is adapted to provide: shaking data pulses (preset pulses 97, Fig. 11, also see page 11, line 15); one or more reset data pulses (page 7, lines 29-31); and one or more driving data pulses to the pixels (driving signal V(n), V(n+1), V(n+2), V(n+3), Fig. 11, also see page 11, lines 15-16). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the display unit of Takeda to include a display processor for supplying a drive signal to the electrodes as taught by Zhou because Zhou provides a display device which has an improved reproduction of grayscales (page 2, lines 18-19).

Regarding claim 10, Takeda as modified by Zhou discloses a display device comprising a display unit as claimed in claim 1. Zhou further discloses the processor further comprising a storage medium (look-up table 105, Fig. 10) for storing information to be displayed (page 10, lines 16-19).

Regarding claim 11, Takeda discloses a method for driving a display unit (Fig. 8) comprising a display panel (e.g., a LCD display panel) with a pixel (7, Fig. 1) coupled to a predefined line (e.g., 21a', Fig. 8) via a capacitance (storage capacitance Cs 8, Fig. 1), which method comprises the step of reducing a voltage difference (e.g., applying a modulating signal whose amplitude changes between Ve+ and Ve- alternately for each field to the pixel electrode via the storage capacitor Cs so as to reduce the DC potential difference , col. 2, lines 14-19 and lines 60-68, col. 3, lines 1-20) across the pixel (7, Fig. 1) resulting from a voltage-jump on the predefined line (the DC potential difference is caused by the potential changes of the scan signal Vg on the predefined line, e.g., 21a', col. 4, lines 53-57).

Takeda fails to disclose that the pixel is a bi-stable pixel.

However, Zhou discloses a driving circuit of an electrophoretic display device (Fig. 2) similar to Takeda, wherein the display device is provided with a bi-stable pixel (18, Fig. 2, page 1, line 29) which retains its state in the absence of power (page 1, lines 28-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the display unit of Takeda with the feature of bi-stable pixel of the electrophoretic display device as taught by Zhou to use an electrophoretic display device for displaying information to a user because a display panel with a bi-stable pixel can reduce the power consumption of a drive circuit.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al (US 5,296,847, hereinafter Takeda) in view of Zhou et al (WO 03/079323, Hereinafter Zhou), and further in view of Zehner et al (US 2003/0137521, hereinafter Zehner).

Regarding claim 12, Takeda discloses a display unit (Fig. 8) comprising a display panel (e.g., a LCD display panel) with a pixel (7, Fig. 1) coupled to a predefined line (e.g., 21a', Fig. 8) via a capacitance (storage capacitance Cs 8, Fig. 1); and means (scan signal driving circuit 20 and image signal driving circuit 12, Fig. 8, col. 7, lines 25-33) for reducing a voltage difference (e.g., applying a modulating signal whose amplitude changes between Ve+ and Ve- alternately for each field to the pixel electrode via the storage capacitor Cs so as to reduce the DC potential difference , col. 2, lines 14-19 and lines 60-68, col. 3, lines 1-20) across the pixel (7, Fig. 1) resulting from a voltage-jump on the predefined line (the DC potential difference is caused by the potential changes of the scan signal Vg on the predefined line, e.g., 21a', col. 4, lines 53-57).

Takeda fails to disclose a processor program product for driving the display unit and that the pixel is a bi-stable pixel.

However, Zhou discloses a driving circuit of an electrophoretic display device (Fig. 2) similar to Takeda, wherein the display device is provided with a processor (processor 15, Fig. 2, and also see page 6, line 16) for processing incoming data into the data signals and a bi-stable pixel (18, Fig. 2, page 1, line 29) which retains its state in the absence of power (page 1, lines 28-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the display unit of Takeda with the features of the processor and the bi-stable pixel of the electrophoretic display device as taught by Zhou to use an electrophoretic display device for processing and displaying information to a user because a display panel with a bi-stable pixel can reduce the power consumption of a drive circuit.

It is noted that both Takeda and Zhou fail to disclose a processor program product for driving the display unit. However, Zehner discloses a processor program product (see [0062] and Fig. 8) which can be run by a controller (16B, Fig. 2) for driving an electrophoretic display (26, Fig. 1) and reducing the remnant voltage of the display (see abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further combine the display unit of Takeda as modified by Zhou with the feature of the processor program product as taught by Zehner to provide a processor program product for use with the display unit of the invention so as to reduce the DC potential difference and improve the display quality and drive reliability.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HONG ZHOU whose telephone number is (571)270-5372. The examiner can normally be reached on Monday through Friday 8:30 A.M. - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571)272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. Z. /
Examiner, Art Unit 2629

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629